

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Andreas POPPE
Dunja MIKOLAJETZ
Elke WESTHOFF
Ferdinand HARDINGHAUS
Jai Won PARK
Karl KOEHLER
Rainer STAHL
David Christopher GLENDE

Serial No.: This application is a National Phase Application of PCT/EP2004/053031, filed 11 November 2004, which claims priority to DE10357114.0, filed 06 December 2003 and DE102004010201.5, filed 02 March 2004.

Filed: herewith

For: HARDENABLE MATERIALS,
CONTAINING DISAGGLOMERATED
BARIUM SULFATE, METHOD FOR
PRODUCTION AND USE THEREOF

Group Art Unit: Unknown

Examiner: Unknown

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May 25, 2006

Date


Marjorie Ellis

PRELIMINARY AMENDMENT

Box PCT
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This preliminary amendment is submitted with the application for entry into the U.S. National Phase under Chapter II. This application is a National Phase Application of PCT/EP2004/053031, filed 11 November 2004, which claims priority to DE10357114.0, filed 06 December 2003 and DE102004010201.5, filed 02 March 2004.

In connection with the filing of this National Phase application, please make the following preliminary amendments.

In the Specification:

Page 1, line , insert—Cross Reference to Related Applications

This application is a National Phase Application of PCT/EP2004/053031, filed 11 November 2004, which claims priority to DE10357114.0, filed 06 December 2003 and DE102004010201.5, filed 02 March 2004.

Page 1, prior to the first paragraph, insert --Background of the Invention--.

Page 2, line 10, insert --Summary of the Invention--.

Page 3, line 18, insert --Detailed Description of the Invention--.

Please amend the claims as follows:

1. (Currently Amended) A curable composition comprising deagglomerated barium sulfate containing at least one dispersant, ~~including nanoparticles containing and~~ at least one crystallization inhibitor and ~~has~~ having a primary particle size of $< 0.5 \mu\text{m}$, ~~preferably $< 0.1 \mu\text{m}$, in particular $< 30 \text{ nm}$.~~
2. (Original) The curable composition as claimed in claim 1, wherein the crystallization inhibitor is selected from the group consisting of compounds of the general formula V or salts thereof



in which the index and the variables have the following meanings:

R^2 is an organic radical containing hydrophobic and/or hydrophilic substructures;

A is C, P(OH), O-P(OH), S(O) or O-S(O); and

p is from 1 to 10 000, ~~preferably from 1 to 5.~~

- 3.(Currently Amended) The curable composition as claimed in claim 2, wherein in the crystallization inhibitor (V), the organic radical R^2 is a low molecular mass, oligomeric or polymeric, carbon chain that is optionally branched and/or cyclic ~~carbon chain-said carbon chain~~ optionally containing heteroatoms selected from the group consisting of oxygen, phosphorus, nitrogen or and sulfur heteroatoms, and/or is substituted by radicals attached via oxygen, nitrogen, phosphorus or sulfur to the radical R^2 .

4. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 3~~, wherein the crystallization inhibitor is at least one of a carboxylic acid having at least two carboxylate groups and at least one hydroxyl group; an alkyl sulfate; an alkylbenzenesulfonate; a polyacrylic acid; or an optionally hydroxy-substituted diphosphonic acid.
5. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 4~~claim 1, wherein the dispersant imparts to the barium sulfate particles a surface which inhibits agglomeration and/or prevents reagglomeration by at least one of electrostatically, or osmotically, ~~or both electrostatically and osmotically~~.
6. (Original) The curable composition as claimed in claim 5, wherein the dispersant is a phosphoric diester including as substructures a polyether group and a C₆-C₁₀ alkenyl group.
7. (Currently Amended) The curable composition as claimed in claim 5 ~~or 6~~, wherein the dispersant contains reactive groups for covalent attachment.
8. (Currently Amended) The curable composition as claimed in claim 7, wherein the reactive groups are at least one of hydroxyl groups ~~and~~/or amino groups.
9. (Original) The curable composition as claimed in claim 5, wherein the dispersant is a polyetherpolycarboxylate substituted terminally on the polyether groups by hydroxyl groups.
10. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 9~~claim 1, wherein the deagglomerated barium sulfate is used in the form of one of a suspension in water, ~~in~~ an organic liquid, ~~in~~ a mixture of water and organic liquid, or as a suspension in a polymeric premix.

11. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 9~~claim 1, wherein the deagglomerated barium sulfate is used as a dry, redispersible powder ~~obtainable~~obtained by drying the deagglomerated barium sulfate.
12. (Currently Amended) A polymeric premix for curable compositions, comprising deagglomerated barium sulfate as ~~set forth in any one of claims 1 to 11~~claimed in claim 1.
13. (Original) The curable composition as claimed in claim 10, wherein the deagglomerated barium sulfate used in the preparation of the curable composition is in suspension in an aqueous phase.
14. (Original) The curable composition as claimed in claim 13, wherein the suspension of the deagglomerated barium sulfate has a solids content of from 0.1 to 30% by weight.
15. (Currently Amended) The curable composition as claimed in claim 13 ~~or 14~~, wherein the suspension has a pH > 7.
16. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 15~~claim 1, wherein the deagglomerated barium sulfate is a catalyst for curing the curable composition.
17. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 15~~claim 1, further comprising binders which contain at least one epoxide group (a1).
18. (Currently Amended) The curable composition as claimed in claim 17, wherein the binders are at least one of oligomers and/or polymers (A).
19. (Currently Amended) The curable composition as claimed in claim 17 ~~or 18~~, wherein the oligomers ~~and/or polymers (A)~~ are at least one of hydrolysates and/or condensates ~~preparable~~prepared by hydrolyzing ~~and/or condensates prepared by~~ condensing, at least

one oligomer and/or polymer (A) containing at least one epoxide group (a1) and at least one hydrolyzable silane group (a2).

20. (Original) The curable composition as claimed in claim 19, wherein the oligomers and polymers (A) containing at least one epoxide group (a1) and at least one hydrolyzable silane group (a2) are selected from the group of the addition copolymers of olefinically unsaturated monomers.

21. (Original) The curable composition as claimed in claim 20, wherein the oligomers and polymers (A) containing at least one epoxide group (a1) and at least one hydrolyzable silane group (a2) are addition (meth)acrylate copolymers.

22. (Currently Amended) The curable composition as claimed in ~~any one of claims 19 to 21~~, wherein the molar ratio of epoxide groups (a1) to hydrolyzable silane groups (a2) in an oligomer or polymer (A) is from 1.5:1 to 1:1.5.

23. (Currently Amended) The curable composition as claimed in ~~any one of claims 19 to 22~~, wherein the oligomer and the polymer (A) are ~~preparable~~ prepared by copolymerizing at least one monomer (a1) containing at least one epoxide group (a1) with at least one monomer (a2) containing at least one hydrolyzable silane group (a2).

24. (Original) The curable composition as claimed in claim 23, wherein the monomers (a1) and (a2) are copolymerizable with at least one further monomer (a3) different from (a1) and (a2).

25. (Currently Amended) The curable composition as claimed in claim 23 ~~or 24~~, wherein the monomers (a1), (a2) and (a3) contain at least one olefinically unsaturated group.

25. (Currently Amended) The curable composition as claimed in claim ~~24~~ 25, wherein the olefinically unsaturated groups are methacrylate and/or acrylate groups.

27. (Currently Amended) The curable composition as claimed in ~~any one of claims 23 to 26~~, wherein the molar ratio of monomer (a1) to monomer (a2) is from 1.5:1 to 1:1.5.

28. (Currently Amended) The curable composition as claimed in ~~any one of claims 19 to 27~~, wherein the oligomers and polymers (A) containing at least one epoxide group (a1) and at least one hydrolyzable silane group (a2) are hydrolyzable and/or condensable at a $\text{pH} < 7$.

29. (Original) The curable composition as claimed in claim 28, wherein the hydrolysis and/or condensation can be conducted in the presence of an organic acid.

30. (Currently Amended) The curable composition as claimed in ~~any one of claims 19 to 29~~ claim 19, wherein the hydrolysis and/or condensation ~~can be~~ is conducted at from -10°C to $+80^{\circ}\text{C}$.

31. (Currently Amended) The curable composition as claimed in ~~any one of claims 1 to 30~~ claim 1, wherein the deagglomerated barium sulfate is additionally modified with at least one modifier.

32. (Currently Amended) The curable composition as claimed in claim 31, wherein the modifier is at least one of acetic acid and/or propionic acid.

Claims 33 and 34 (cancelled).

35. (New) A material comprising the curable composition as claimed in claim 1, wherein said material is selected from the group consisting of a coating material, an adhesive, a sealant, a starting material for moldings and a starting material for self-supporting sheets.

36. (New) A curable composition as claimed in claim 1 comprising a composition for shielding substrates from high-energy radiation.

Please delete the Abstract and substitute the following Abstract.

Abstract

Curable compositions comprising deagglomerated barium sulfate containing at least one dispersant and at least one crystallization inhibitor and having a primary particle size $< 0.5 \mu\text{m}$, preferably $< 0.1 \mu\text{m}$, in particular $< 30 \text{ nm}$, and their use.

REMARKS

Upon entry of the preliminary amendment, claims 1-32 and 35-36 are pending in the application. Claims 33 and 34 are canceled without prejudice. The claims have been amended to comport with U.S. Patent Office regulations. New claims 35 and 36 are supported in the specification at page 27, lines 10-24. Examination of the claims is respectfully requested.

Respectfully submitted,



Anne G. Sabourin, Esq.
Reg. No. 33,772
Patent Attorney
(248) 948-2021

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BASF Corporation
26701 Telegraph Road
Southfield, MI 48034-2442